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CQCE/BBMP/DM/16/2020-2021

Date 19.09.2020

ATTERBERG LIMITS TEST FOR WMM

: Executive Engineer, RR Nagar Division,BBMP, Bangalore.
: Sri.Damodar Manjunath, Contractor, Bangalore.
Name of Work :Comprehensive Development of roads and drains in ward no. 16, Rajarajeshwarinagara Assembly Constituency under Package-2019-20 RRN-DIV-(01),BBMP, Bangalore
IS Code: IS 2720(Part 5):1985
Date of Testing 17.09.2020 to 19.09.2020
Material Type : Wet Mix Macadam

Sl. No.	Particulars	Test Results	Requirement as per MORTH 5th edition Cl.406.2.1.2
1	Liquid Limit	20.10	-
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

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Asst. Executive Engineer
Yeshwanthpura Sub-Division
Bruhat Bangalore Mahanagara Palike

For CIVIL QUALITY CONSULTANTS & ENGINEERS

Authorised Signatory

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CQCE/BBMP/DM/16/2020-2021

ATTERBERG LIMITS TEST FOR WMM

Date 19.09.2020

: Executive Engineer, RR Nagar Division,BBMP, Bangalore.
: Sri.Damodar Manjunath, Contractor, Bangalore.
Name of Work :Comprehensive Development of roads and drains in ward no. 16, Rajarajeshwarinagara Assembly Constituency under Package-2019-20 RRN-DIV-(01),BBMP, Bangalore
IS Code: IS 2720(Part 5):1985
Date of Testing 17.09.2020 to 19.09.2020
Material Type : Wet Mix Macadam

Sl. No.	Particulars	Test Results	Requirement as per MORTH 5th edition Cl.406.2.1.2
1	Liquid Limit	19.70	-
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

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Date 19.09.2020

ATTERBERG LIMITS TEST FOR WMM

: Executive Engineer, RR Nagar Division,BBMP, Bangalore.
: Sri.Damodar Manjunath, Contractor, Bangalore.
Name of Work :Comprehensive Development of roads and drains in ward no. 16, Rajarajeshwarinagara Assembly Constituency under Package-2019-20 RRN-DIV-(01),BBMP, Bangalore
IS Code: IS 2720(Part 5):1985
Date of Testing 17.09.2020 to 19.09.2020
Material Type : Wet Mix Macadam

Sl. No.	Particulars	Test Results	Requirement as per MORTH 5th edition Cl.406.2.1.2
1	Liquid Limit	18.60	-
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

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Job No: CQCE/BBMP/DM/16/2020-2021 Date:23.09.2020

TEST REPORT ON PAVING BITUMEN

Client :	**: Executive Engineer, RR Nagar Division,BBMP, Bangalore.**
Agency:	**: Sri.Damodar Manjunath, Contractor, Bangalore.**
Name of work:	:Comprehensive Development of roads and drains in ward no. 16, Rajarajeshwarinagara Assembly Constituency under Package-2019-20 RRN-DIV-(01),BBMP, Bangalore
BIS Code:	IS 73:2013,IS 1203:1978, IS 1208:1978, IS 1205:1978, IS1448(P-69):1969
Date of Testing:	**23.09.2020**
Type of Mix:	**Dense Graded Bituminous Macadam , VG 30**
Source of Location:	**Hot Mix Plant**

The results of the tests conducted on the bitumen sample using for Dense Graded Bituminous Macadam

Sl.No	Description	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 0C, 100gms, 5sec, 1/10 mm	53	Min 45
2	Softening point, 0C	49	Min 47
3	Ductility at 250C, cm	99	Min40
4	Flash Point, 0C	265	Min 220

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CQCE/BBMP/AB/16/2020-2021 23.09.2020

TEST RESULTS OF AGGREGATE IMPACT VALUE

Client : Executive Engineer, RR Nagar Division,BBMP, Bangalore.
Agency: Sri.Damodar Manjunath, Contractor, Bangalore.
Name of work: Comprehensive Development of roads and drains in ward no. 16, Rajarajeshwarinagara Assembly Constituency under Package-2019-20 RRN-DIV-(01),BBMP, Bangalore
Source / Location: Hot Mix Plant, Bangalore
BIS Code: IS 2386 Part (4):1963
Type of Mix: Dense Graded Bituminous Macadam
Date of test: 23.09.2020

Sl No.	Details	Trial No.			Average
		1	2	3	
1	Total weight of aggregate sample filling the cylindrical measure = W1 g	400	400	400	
2	Weight of agregate passing 2.36 mm sieve after the test = W2 g	87	85	85	
3	Weight of aggregate retained 2.36 mm sieve after the test = W3 g	313	315	315	
5	Aggregate Impact value = percent fines	21.75	21.25	21.25	21.50
	100* (W2/W1) percent				

Comments:

→ Maximum allowable Aggregate Impact value for Dense Graded Bituminous Macadam is 27% (Table 500-8 of MORTH specification)

Note:

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23.09.2020

TEST RESULTS OF AGGREGATE IMPACT VALUE

Client : Executive Engineer, RR Nagar Division,BBMP, Bangalore.
Agency : Sri.Damodar Manjunath, Contractor, Bangalore.
Name of work: :Comprehensive Development of roads and drains in ward no. 16, Rajarajeshwarinagara Assembly Constituency under Package-2019-20 RRN-DIV-(01),BBMP, Bangalore
Source / Location: Hot Mix Plant, Bangalore
BIS Code: IS 2386 Part (4):1963
Type of Mix: Dense Graded Bituminous Macadam
Date of test: 23.09.2020

Sl No.	Details	Trial No.				Average
		1	2	3	4	
1	Total weight of aggregate sample filling the cylindrical measure = W1 g	400	400	400	400	
2	Weight of agregate passing 2.36 mm sieve after the test = W2 g	85	86	88	85	
3	Weight of aggregate retained 2.36 mm sieve after the test = W3 g	315	314	312	315	
5	Aggregate Impact value = percent fines 100* (W2/W1) percent	21.25	21.50	22.00	21.25	21.50

Comments:

→ Maximum allowable Aggregate Impact value for Dense Graded Bituminous Macadam is 27% (Table 500-8 of MORTH specification)

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CQCE/BBMP/DM/16/2020-2021 Date 23.09.2020

TEST RESULTS OF AGGREGATE SHAPE TEST (Flakiness & Elongation)

: Executive Engineer, RR Nagar Division, BBMP,Bangalore.
: Sri.Damodar Manjunath, Contractor, Bangalore.
Name of work: :Comprehensive Development of roads and drains in ward no. 16, Rajarajeshwarinagara Assembly Constituency under Package-2019-20 RRN-DIV-(01),BBMP, Bangalore.

BIS Code: IS 2386 Part (1):1963
Date of Test: 23.09.2020
Type of Mix: Dense Graded Bituminous Macadam

Sl.No.	Flakiness Index Value(%)	Elongation Index Value(%)	Total(Combined Flakiness and Elongation)(%)	Requirements
1	9.60	10.50	20.10	Maximum allowable Combined Flakiness and Elongation Indices for Dense Graded Bituminous Macadam is 35% as per Table 500.8 MORTH Specification.
2	9.90	10.90	20.80	
3	10.50	9.30	19.80	

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CQCE/BBMP/DM/16/2020-2021 Date 23.09.2020

TEST RESULTS OF AGGREGATE SHAPE TEST
(Flakiness & Elongation)

: Executive Engineer, RR Nagar Division,BBMP, Bangalore.
: Sri.Damodar Manjunath, Contractor, Bangalore.
Name of work: :Comprehensive Development of roads and drains in ward no. 16, Rajarajeshwarinagara Assembly Constituency under Package-2019-20 RRN-DIV-(01),BBMP, Bangalore.

BIS Code: IS 2386 Part (1):1963
Date of Test: 23.09.2020
Type of Mix: Dense Graded Bituminous Macadam

Sl.No.	Flakiness Index Value(%)	Elongation Index Value(%)	Total(Combined Flakiness and Elongation)(%)	Requirements
1	8.60	9.80	18.40	Maximum allowable Combined Flakiness and Elongation Indices for Dense Graded Bituminous Macadam is 35% as per Table 500.8 MORTH Specification.
2	9.80	10.20	20.00	
3	9.70	10.90	20.60	
4	10.50	9.80	20.30	

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CQCE/BBMP/DM/16/2020-2021

Specific Gravity And Water Absorption Test

Date: 23.09.2020

	: Executive Engineer, RR Nagar Division, BBMP,Bangalore.
	: Sri.Damodar Manjunath, Contractor, Bangalore.
Name of the Work	:Comprehensive Development of roads and drains in ward no. 16, Rajarajeshwarinagara Assembly Constituency under Package-2019-20 RRN-DIV-(01),BBMP,Bangalore
BIS Code	IS 2386(Part 3):1963
Type of Mix	Dense Graded Bituminous Macadam
Date of Testing	21.09.2020 to 23.09.2020

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2021	2022	2022	
2	Weight of basket suspended in water	W_2 g	754	754	754	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1267	1268	1268	
4	Weight of saturated surface dry aggregate in air	W_3 g	2016	2017	2015	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	749	749	747	
6	Weight of oven dried aggregate	W_4 g	2007	2007	2005	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.680	2.680	2.684	2.681
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.712	2.716	2.720	2.716
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.45%	0.50%	0.50%	0.48%

Comments:

→ Maximum allowable Aggregate Water absorption value for Dense Graded Bituminous Macadam is 2.0%(As per MORTH table 500.8)

Asst. Executive Engineer
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CQCE/BBMP/DM/16/2020-2021

Date: 23.09.2020

Aggregate Gradation Test

	: Executive Engineer, RR Nagar Division, BBMP,Bangalore.
	: Sri.Damodar Manjunath, Contractor, Bangalore.
Name of the Work	:Comprehensive Development of roads and drains in ward no. 16, Rajarajeshwarinagara Assembly Constituency under Package-2019-20 RRN-DIV-(01),BBMP,Bangalore
BIS Code	IS 2386(Part 1):1963(RA 2011)
Sample I / D	Hot mix Plant, Bangalore.
Type of Mix	Dense Graded Bituminous Macadam
Date of Testing	23.09.2020

Total Weight of Sample: 10000 gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Requirement as per MORTH table 500.10	Remarks
37.50	0	0.0	0	100	100	Gradation satisfies Grade-II MORTH specification
26.50	725	7.3	7.25	92.75	90 - 100	
19.00	1296	13.0	20.21	79.79	71 - 95	
13.20	1325	13.3	33.46	66.54	56 - 80	
4.75	2585	25.9	59.31	40.69	38 - 54	
2.36	1015	10.2	69.46	30.54	28 - 42	
0.300	1369	13.7	83.15	16.85	7 - 21	
0.075	1140	11.4	94.55	5.45	2 - 8	

Total Weight of Sample: 10000 gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Requirement as per MORTH table 500.10	Remarks
37.5	0	0.0	0	100	100	Gradation satisfies Grade-II MORTH specification
26.5	692	6.9	6.92	93.08	90 - 100	
19	1521	15.2	22.13	77.87	71 - 95	
13.2	1174	11.7	33.87	66.13	56 - 80	
4.75	2469	24.7	58.56	41.44	38 - 54	
2.360	1178	11.8	70.34	29.66	28 - 42	
0.300	1328	13.3	83.62	16.38	7 - 21	
0.075	1169	11.7	95.31	4.69	2 - 8	

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